REMARKS

Applicant respectfully requests reconsideration. Claims 1-4 were previously pending in this application. Claims 1 and 2 are amended herein without prejudice or disclaimer. Claims 3 and 4 are canceled herein without prejudice or disclaimer. Claims 87-88 are new. As a result, claims 1, 2, and 87-88 are pending for examination with claim 1 being an independent claim. No new matter has been added.

Rejection Under 35 U.S.C. 112

Claims 1-4 were rejected under 35 U.S.C. § 112, first paragraph, because the specification, allegedly, "while being enabling for administering an unmethylated CpG nucleic acid wherein when the CpG nucleic acid is an adjuvant nucleic acid, it is administered in the presence of a vaccine to a subjected infected with HIV to induce B cells, natural killer cells and IL-6, does not reasonably provide enablement for any other embodiment" (Office Action page 2).

Applicant respectfully disagrees with the Examiner's assertion that the present disclosure lacks enablement for the claimed invention. However, without acquiescing to the Examiner's position, Applicant has amended the claims to cancel claims 3 and 4 and to amend claim 1 to recite administering an unmethylated CpG nucleic acid to "*a subject* having an immune system deficiency" associated with an HIV infection, "to boost the subject's immune system."

Applicant submits that the claims as amended are enabled, because the specification teaches that an unmethylated CpG nucleic acid can be administered to a subject having an immune system deficiency associated with an HIV infection. The specification also teaches that an unmethylated CpG nucleic acid can be used to boost a subject's immune system. The specification provides a detailed description of techniques for administering CpG nucleic acids and also provides several Examples that illustrate immunostimulatory properties of CpG nucleic acids (e.g., B cell activation and NK cell activation, etc.) as previously discussed.

Accordingly, Applicant submits that, based on the teachings of the specification, one of ordinary skill in the art would have a reasonable expectation that administering an unmethylated CpG nucleic acid would be useful to treat a subject having an immune system deficiency associated with an HIV infection by boosting the subject's immune system.

Applicant also submits that statements in the Office Action indicate that the claims as currently amended are enabled. Although Applicant does not agree with the limitations of the Examiner's characterization of the specification on page 5 of the Office Action, the Examiner's position that "the specification appears to be drawn to a definition of treatment limited to an enhancement of the immune system" (Office Action page 5) indicates that the amended claims that recite boosting "the subject's immune system" are enabled. In addition, the statement on page 2 of the Office Action that the specification "while being enabling for administering an unmethylated CpG nucleic acid wherein when the CpG nucleic acid is an adjuvant nucleic acid, it is administered in the presence of a vaccine to a subject infected with HIV to induce B cells, natural killer cells and IL-6..." indicates that claim 88 is enabled.

Accordingly, without agreeing with the Examiner's statements relating to HIV treatment, Applicant respectfully submits that by replacing the phrase to "treat HIV infection" with the phrase to "boost the subject's immune system," the present amendments obviate the rejections relating to HIV treatment *per se*.

Nonetheless, Applicant submits the following remarks in response to the Examiner's characterization of the state of the art for HIV therapy. The Examiner asserts, generally citing Cohen and Fauci (1998), that "HIV therapy even many years post-filing is still hindered by inadequate treatments" (Office Action page 6). As a threshold issue, Applicant respectfully disagrees with the Examiner's characterization of Cohen and Fauci. Applicant submits that the issues raised by Cohen and Fauci pertain more to availability (e.g., accessibility) of such technology to patients across certain parts of the world, in particular. However, a distinction should be made between a social issue (as discussed in the Cohen & Fauci reference) and the state of the art, and the former should not serve as a basis for rejection for purposes of establishing a lack of enablement.

In addition, Applicant submits that an alleged lack of adequate treatments several years post-filing does not establish a lack of enablement, in the application as filed, for methods that are useful

to treat a subject having an immune system deficiency associated with HIV infection. Applicant submits that despite the alleged lack of effective treatments several years post-filing, advances in the field of HIV therapy have increased the length and quality of the lives of individuals infected with HIV. Applicant further submits that the present invention provided, as of its effective filing date, a useful method for treating a subject having an immune system deficiency associated with HIV infection by boosting the subject's immune system as presently claimed.

In addition, several post-filing publications support the enablement of the present claims in view of the teachings in the specification. For example, the review article published in July 2003, Ahmad and Ahmad, *Curr HIV Res.* **1(3)**: 295-307, "HIV's evasion of host's NK cell response and novel ways of its countering and boosting anti-HIV immunity," states the following:

> By their ability to kill virus-infected cells and produce cytokines and chemokines, NK cells play an important role in controlling viral infections. In vivo studies in animal models and in human patients have demonstrated that depletion or deficiency of NK cells may result in inability of the host to control these infections (Page 299, right column).

Thus, the teachings in the present specification that unmethylated CpG nucleic acids boost the immune system (e.g., by increasing NK cell activity) support the enablement of claims relating to treating an immune system deficiency associated with HIV by boosting the immune system of an infected subject.

The Examiner, in response to Applicant's arguments presented in the previous communication of March 28, 2007, also raised objections as to the alleged unpredictability of the art. According to the Examiner, "the basis of the unpredictability as to identifying adjuvant versus immunostimulatory CpG molecules has less to do with the functional definition of the terms then [*sic*] the ability to structurally identify each one. *It is clear the purpose of either would be distinct* and yet applicants have not provided the structural requirements of either and so it is not clear *how to distinguish between the two types of structures* and *how to know whether one was using an adjuvant type CpG or an immunostimulatory CpG.* Applicants do not teach one of skill in the art what an adjuvant CpG versus immunostimulatory versus IFN-α inducing CpG molecule looks like and the claims require that such a selection be made" (Office Action pages 8-9; emphasis added).

Applicant respectfully disagrees. Initially, the Examiner's assumption that "*It is clear the purpose of either would be distinct* " is without merit. Viewed as a whole, the specification as filed teaches that unmethylated CpG nucleic acids have immunostimulatory properties that are useful to boost the immune system of a subject having an immune system deficiency. In addition, the lack of a detailed structural and functional description of the precise molecular and cellular mechanisms of how these effects are produced does not render the disclosure non-enabling, because the aforementioned "beneficial effects" are reasonably expected. Finally, Applicant submits that the claims as amended do not require one to know "*how to distinguish between the two types of structures* and *how to know whether one was using an adjuvant type CpG or an immunostimulatory CpG.*"

Accordingly, Applicant submits that the immunostimulatory properties of unmethylated CpG nucleic acids disclosed in the application as filed support the enablement of claims relating to methods of administering unmethylated CpG nucleic acids to subjects suffering from an immune system deficiency associated with an HIV infection. Applicant further submits that these teachings are supported by the parent applications and that the presently amended claims are therefore entitled to the claimed priority dates.

In sum, because the unmethylated CpG nucleic acids of the instant invention are reasonably expected to produce beneficial effects (e.g., B cell activation, NK cell activation, etc.) when administered to a subject having an immune system deficiency associated with HIV infection, the claimed method is enabled. The inquiry should be whether the skilled artisan would reasonably believe, when presented with teachings and data demonstrating the ability of unmethylated CpG nucleic acids to boost a subject's immune system, that the effects are beneficial for treating subjects having an immune system deficiency associated with HIV infection. Applicant asserts that indeed the skilled artisan would conclude as such. Absent evidence to the contrary, merely asserting that the claims read broadly is not sufficient to maintain the enablement rejections in view of the present amendments.

Accordingly, it is respectfully requested that the Examiner reconsider and withdraw the rejections under § 112, first paragraph.

Double Patenting Rejection

Claims 1 and 2 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 37-56 of copending Application No. 10/788,191.

Claim 1 was provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 37, 45, 46, 50, 56-58 of copending Application No. 11/067,516.

Applicant thanks the Examiner for acknowledging that Applicant will address the provisional obviousness double patenting rejections upon an indication of allowable subject matter.

CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

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Respectfully submitted,

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